In the Claims:

The following list of claims will replace all prior versions of the claims in the application.

- 1. (Cancelled)
- 2. (*Previously added*) A method for assessing toxicity and toxicology of a compound, comprising:
 - a) exposing a set of genes to a compound;
 - b) monitoring the response of each gene in the set of genes to the compound;
 - c) creating gene expression profiles using two or more variables;
 - d) creating composite variables from the gene expression profiles of (c);
 - e) creating one composite from the composite variables of (d); and
 - f) comparing the results of (e) to a profile of a known compound.
- 3. (*Previously added*) The method of Claim 2, wherein the set of genes comprises 10-100,000 genes.
- 4. (*Previously added*) The method of Claim 2, wherein the variables are time, treatment or dose.
- 5. (*Previously added*) The method of Claim 4, wherein the variables of (c) are dose and time.
- 6. (*Previously added*) The method of Claim 2, wherein the response of the genes is averaged.

- 7. (Currently amended) The method of Claim 2, wherein the gene expression profiles are created using step (c) comprises performing contrast analysis.
- 8. (Currently amended/Withdrawn) The method of Claim 2, wherein the gene expression profiles are created using step (c) comprises performing cluster analysis.
- 9. (Currently amended) The method of Claim 2, wherein the gene expression profiles of step (d) are created using comprises performing principal component components analysis, partial least squares, or factor analysis.
- 10. (Previously added) The method of Claim 2, wherein the composite variables of(e) are created using logistic regression, or discriminant analysis.
- 11. (*Currently amended*) A method for screening a compound for a toxicological effect, comprising
- (a) selecting a plurality of polynucleotide targets wherein the polynucleotide targets have a first gene expression levels altered in tissues treated with known toxicological agents;
- (b) treating a second tissue sample with a compound to be tested to induce second gene expression levels of a plurality of polynucleotide;
- (c) comparing the first expression level of (a) with the second expression level of (b) to generate a measure of similarity.
- 12. (*Currently amended*) The method of Claim 11, wherein the similarity of the first expression level to the second expression level correlates with a toxicological effect.

- 13. (*Previously added*) The method of Claim 11, wherein the tissue samples are liver, kidney, brain, spleen, pancreas and lung.
- 14. (*Previously added*) The method of Claim 11, wherein the known toxicological agent is acetaminophen.
- 15. (Withdrawn) The method of Claim 11, wherein the known toxicological agent is CCl₄.

Claims 16 - 22 (*Cancelled*.)

- 23. (New/Withdrawn) The method of Claim 2, wherein step (d) comprises performing partial least squares analysis.
- 24. (New/Withdrawn) The method of Claim 2, wherein step (d) comprises performing factor analysis.
- 25. (New) The method of Claim 1, wherein the compound is acetaminophen.
- 26. (*New*) A method for assessing toxicity and toxicology of a compound, comprising:
 - a) exposing a set of genes to a compound;
- b) generating gene expression data corresponding to the response of each gene in the set of genes to the compound;
- c) selecting a subset of the gene expression data which are time stable and dose dependent;
- d) combining the subset of gene expression data into one or more composite variables to assign each gene to a pattern; and

- e) converting the one or more composite variables into one predictive composite measure for determining a probability of similarity; wherein the one predictive measure .
- 27. (New) The method of claim 26, wherein step (c) comprises performing contrast analysis.
- 28. (*New*) The method of claim 26, wherein step (d) comprises performing principal components analysis.
- 29. (New) The method of claim 28, wherein step (e) comprises performing a logistic regression using the principal components identified in step (d).